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EXAMINER

HU, HENRY S

ART UNIT PAPER NUMBER

1713

DATE MAILED: 01/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,342

Applicant(s)

MIYAKI ET AL.

Examiner

Henry S. Hu

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 9 and 14-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 1,3 and 5-8 is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 6) ☐ Other: _____

DETAILED ACTION

1. It is noted that USPTO has received a pre-amendment on claims as paper No. 5 filed on April 8, 2003 under CFR 1.121(C). **Claims 1-6 and 9 were amended, and new Claims 10-20 were added. Claims 1-20 are pending now.** An action follows.

Specification

2. The disclosure is objected to because of the following informalities:

(a) On page 1 at line 1, the use of "**TYPE**" in title "**FLUORINE TYPE ADHESIVE RESIN COMPOSITION**" is improper since it is not clear what kinds of modification or derivative are related. The examiner suggests using a new title of "**FLUORINE-CONTAINING ADHESIVE RESIN COMPOSITION**".

(b) On page 5 at line 20, recitation "hydro fluorocarbon" is wrong and should be changed to "**hydrofluorocarbon**" since it is a hydrocarbon with some substitution of fluorine atoms.

(c) On page 5 at line 20, recitation "1,3-dioxol" is wrong and should be changed to "**1,3-dioxol**" since it relates to a cyclic monomer such as TTD.

(d) On page 11 at line 7-8, recitation "LiPF₆, LiClO₄....Li[(SO₂CF₃)₂N]" is wrong and should be retyped to "**LiPF₆, LiClO₄....Li[(SO₂CF₃)₂N]**" using traditional wording.

(e) On page 8 at line 11 and page 10 at line 16, two recitations of "dimethylholmeamide" useful as a solvent may have typographical error and need to be corrected.

(f) On page 7 at line 12, "can be use" should be changed to "**can be used**".

Appropriate corrections for (a) - (f) are required.

Election/Restrictions

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. **Claims 1-8 and 10-13**, drawn to an adhesive resin composition as well as its solution, dispersion or emulsion, classified in class 524, subclass 502.

II. **Claims 9 and 14-20**, drawn to an electrode of battery, classified in class 429, subclass 232.

4. The inventions are distinct, each from the others because of the following reasons:

Inventions II and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions Group I was drawn to an adhesive resin composition as well as its solution, dispersion or emulsion, while Group II was drawn to an electrode of battery, therefore the scope of the claims, i.e., the metes and boundaries are distinct.

Because these inventions are distinct for the reasons given above and the search required for each group is not required for other groups have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. During two telephone conversations with **I. William Millen (Harry Schulman)** (703 243-6333) on July 30, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-8 and 10-13. Affirmation of this election for Group I, claims 1-8 and 10-13 must be made by applicant in replying to this Office action. **Claims 9 and 14-20** are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

6. Claims 1, 3 and 5-8 are objected to because of the following informalities:

(a) On Claim 1 at line 3, Claim 5 at line 2, Claim 6 at line 2, and Claims 10-12 at line 2, all phrases **“chemically denatured by partial dehydrogenfluoride reaction and oxidation reaction”** is not clear. The **“are chemically”** used on Claim 1 at line 3 may be wrong and needs to change to **“is chemically”** in view of other dependent claims. In one way, it may mean **a partial reaction was run on both reactions**. Please refer to page 6 at line 18-20 for proper correction such as **“by partial dehydrogenfluoride reaction and followed by oxidation reaction”**. In the other way, it may mean **for only resins (B) or both resins (A) and (B)**. The examiner suggests **regrouping the sentence** to reflect the statement defined in specification.

(b) On Claim 3 at line 3 and Claim 6 at line 4, recitation **“hexafluopropylene”** is wrong and should be changed to **“hexafluoropropylene”** since it relates to a fluorinated monomer HFP.

(c) On Claim 4 at line 2, recitation "o" should be changed to "of" due to a typographical error.

(d) On Claim 8 at line 5, recitation "Dispersion" should be changed to "dispersion" due to a typographical error.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

On Claims 5-8 at line 1, the use of "type" in phrase "fluorine type adhesive resin composition" is vague and indefinite since it is not clear what kinds of substituent or how much degree of modification on fluorinated resin is involved. A precise language is suggested.

Claim Rejections - 35 USC § 102

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8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The limitation of parent Claim 1 of the present invention relates to an adhesive resin composition comprising (A) at least one resin made from a fluorine-containing monomer and (B') at least one resin made from a fluorine-containing monomer are chemically denatured by partial dehydrogenfluoride reaction and oxidation reaction, the weight ratio of A/B' being 30/70 to 99/1. See other limitations of Claims 2-8 and 10-13.

9. Claims 1-8 and 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Cluff (US 3,147,314).

Regarding the limitation of parent Claim 1, Cluff discloses that **carboxyl group-terminated copolymers** of vinylidene fluoride-hexafluoropropylene can be used as plasticizers for the higher molecular weight fluoroelastomers (column 4, line 21-31; title). Cluff further discloses the preparation of such novel carboxyl group-terminated copolymer through **dehydrogenhalogenation by heating in the presence of a nitrogen base and further with oxidation on the carbon-to-carbon double bond to form carboxyl groups** (column 2, line 26-65). The ratios of copolymer plasticizer (B') to fluoroelastomer (A) shown in Table on column 6, line 30-55 are overlapping the claimed

ratio. With respect to the use as adhesives, Cluff furthermore discloses that the copolymer may be used as caulking compositions to fill in irregularly shaped voids which if difficult to accomplish with known fluoroelastomers (column 3, line 50-61).

10. Regarding **Claims 2-4**, Cluff discloses that fluoroelastomer is preferred to be a polymer with similar chain to the copolymer plasticizer (column 4, line 28-31) for better compatibility and vulcanization. Therefore, homopolymer of VDF of Claim 2 or the copolymers of Claims 3-4 are included since copolymer plasticizer is a copolymer of vinylidene fluoride-hexafluoropropylene.

Regarding **Claims 5-6 and 10-13**, same reason used in the discussion of Claims 2-4 can be applied to have a homopolymer or a copolymer as plasticizer.

Regarding **Claims 7-8**, Cluff discloses that such copolymer plasticizer can be in the form of solution with organic solvent. Additionally, Cluff does not rule out the use of fluoroelastomer in the form of an emulsion or a dispersion.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 1-8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (US 3,560,595) in view of Cluff (US 3,147,314).

Regarding the limitation of parent **Claim 1**, **Phillips** et al. disclose that a sealant composition comprises (A) a polymer of Viton A and (B) a dehydrofluorinated Viton A (see examples 1-4 in column 3, line 44 – column 4, line 30). The ratios of dehydrofluorinated copolymer (B) to fluoroelastomer (A) shown in examples 1-4 are overlapping the claimed ratio.

13. **Phillips** is silent about including polymer obtained from oxidation of dehydrofluorinated copolymer. **Cluff** teaches in the course of making adhesive or caulking composition from elastomers, **carboxyl group-terminated copolymers** of vinylidene

fluoride-hexafluoropropylene can be used as plasticizers for the higher molecular weight fluoroelastomers (column 4, line 21-31; title). Cluff further teaches the preparation of such novel carboxyl group-terminated copolymer through **dehydrohenhalogenation by heating in the presence of a nitrogen base and further with oxidation on the carbon-to-carbon double bond to form carboxyl groups** (column 2, line 26-65). Fluoroelastomer is preferred to be a polymer with similar chain to the copolymer plasticizer (column 4, line 28-31) for better compatibility and vulcanization. The advantage is such an addition of carboxyl group-terminated copolymer will behave like a plasticizer.

Therefore, one having ordinary skill in the art would find it obvious to modify Phillips' process of making a sealant by **replacing dehydrofluorinated Viton A with or adding a polymer obtained from further oxidation of dehydrofluorinated Viton A to carry carboxyl terminated groups** as taught by Cluff, with an advantage as such modification or addition step will effectively enhance the performance since such an oxidized copolymer can act as plasticizer, and thereby obtain a better quality of product as well as a more efficient process with better compatibility and vulcanization since fluoroelastomer is a polymer with similar chain to the copolymer plasticizer.

14. Regarding the rejection of Claims 2-8 and 10-13, the discussion of the disclosures of the prior art of Cluff for Claims 1-8 and 10-13 of this office action is incorporated here by reference. Since Phillips' compositions relate to **fluoroelastomers of Viton, A which**

comprises vinylidene fluoride monomer, Claims 2-8, and 10-13 are thereby rejected with the same reason as discussed above for Cluff.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to an adhesive resin composition comprising (A) at least one resin made from a fluorine-containing monomer and (B') at least one resin made from a fluorine-containing monomer are chemically denatured by partial dehydrogenfluoride reaction and oxidation reaction:

WO Patent No. 97/27260 to Miyaki et al. disclose the preparation of an adhesive composition useful to bond metals by **improving the adhesion of polyvinylidene fluoride resins to metal** (abstract, line 1-3). However, Miyaki fails to teach or fairly suggest using the claimed polymer (B'), which is chemically denatured by partial dehydrogenfluoride reaction and oxidation reaction.

16. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose new telephone number is **(571) 272-1103 after December 22, 2003**. The examiner can be reached on Monday through Friday from 9:00 AM -5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 308-0661.



Henry S. Hu

January 9, 2003



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